Mapping Fire Regimes in the Miombo Woodlands of the Beira Corridor, Central Mozambique: preliminary results

Victorino Buramuge[1] vburamuge@gmail.com
Romana B. Rombe[1] romana.bandeira467@gmail.com
Lennart Olsson[2] lennart.olsson@lucsus.lu.se
Natasha Ribeiro[1] joluci2000@yahoo.com
[1]Department of Forestry Engineering, Eduardo Mondlane University, Maputo, Mozambique
[2]Lund University Centre for Sustainability Studies, Lund, Sweden

1. Introduction

Fire is one of the main disturbance factors and key to maintain ecosystem functions in Miombo woodlands. The Miombo woodlands of southern Africa are rich in biodiversity and provide important goods and services for over 80% of rural and urban dwellers (Ryan *et al.,* 2016). In recent decades, wildfires have received particular attention due to associated ecological, economic, social and political impacts (Lentile, *et al.,* 2006). The present study aims to understand the role of fire in land use and land cover changes in Miombo woodlands of Beira Corridor.
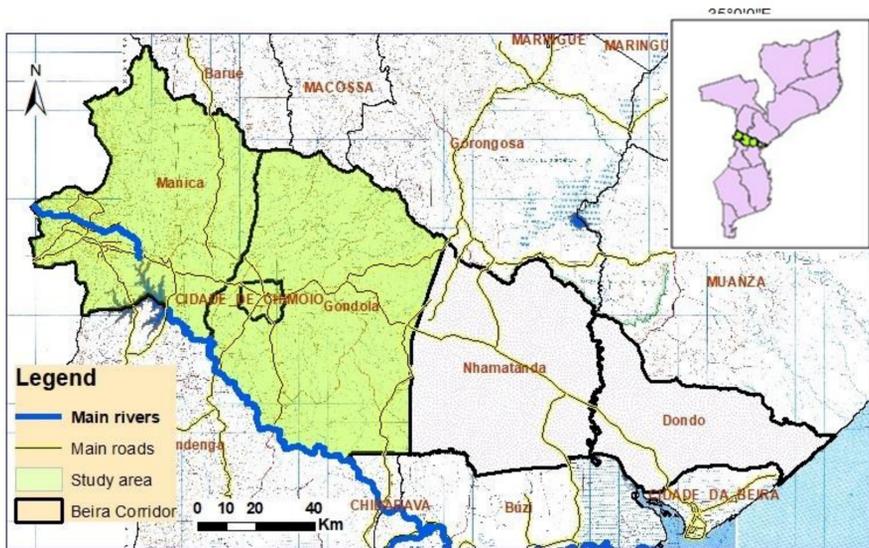
2. Methodology

Figure 1. Study area: Gondola and Manica districts, Beira Corridor

- Data sets:

i) VIIRS nominal daily active fires with high confidence level (>80%) for 2015 and 2018.

ii) Monthly burned area data of MODIS MCD64A1 product of (2001-2018).

iii) Sentinel-2 Cloud-Free Images for November 2015 and November 2018

- Data Analysis:

i) Moran's Index was used to determine active fire aggregation pattern; and estimated the degree of spatial autocorrelation.

ii) Maximum likelihood for land use classification: (i) Dense Miombo; (ii) Open Miombo; (iii) Agriculture; (iv) Others
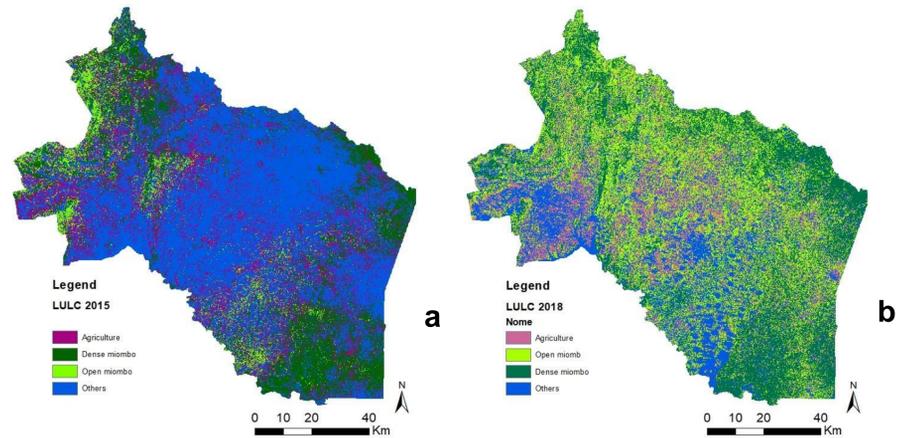
3. Preliminary Results and Discussion

Figure 2. Land use land cover maps of the year 2015 and the year 2018
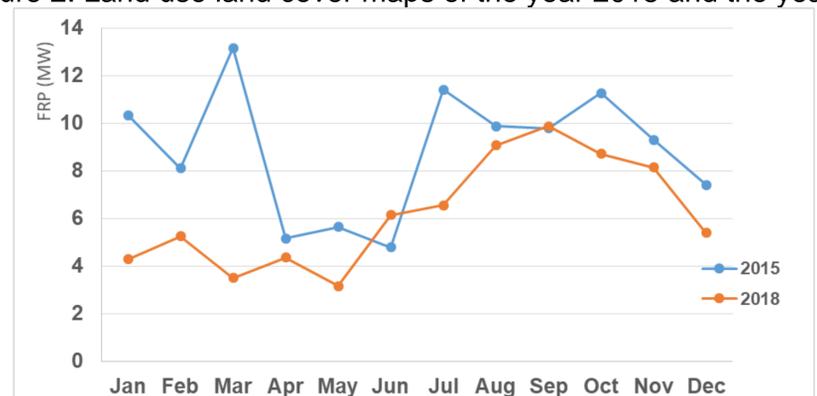

Figure 3. Fire intensity for the years 2015 and 2018.

- In 2015, fire started earlier than expected and was more intense than in 2018 (Fig.3). High fire frequency is observed in miombo woodlands comparing to other land use classes (Fig. 4).

- A clustered distribution of active fire may indicate that they were very intense and may have spread over a wide area (Portillo-Quintero *et al.,* 2013), affecting the coverage of the Miombo woodlands (Fig. 2a).

- Although fire eventually affected Miombo cover in 2015, there are signs of recovery in 2018, which reveals the high resilience of this ecosystem.
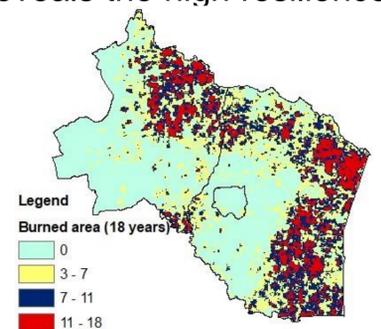

Figure 4. Distribution of fire frequency in Miombo woodlands of the Beira Corridor

4. Preliminary Conclusions

- The occurrence of fire tends to follow the gradient of Miombo woodlands distribution.
- Higher fire intensity was observed in 2015, affecting Miombo woodlands coverage.

5. References

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